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A Field Case of Nutritional Encephalomalacia in Chicks

By

R. H. COMMON AND H. G. LAMONT

(MINISTRY OF AGRICULTURE FOR NORTHERN IRELAND AND THE QUEEN'S UNIVERSITY OF BELFAST)

Pappenheimer and Goettsch (1931) gave the first accurate account of nutritional encephalomalacia many years ago. Jungherr (1936) would seem to have been the earliest observer accurately to identify a field case of this nutritional disorder, although clinically similar ataxic, paralytic conditions of chicks had already been familiar to poultrymen in U.S.A. under the general name of "crazy chick" disease. While the conditions which have been designated as "crazy chick disease" are not necessarily all the same, it has become customary to restrict the term to nutritional encephalomalacia since the definite recognition of this condition by Pappenheimer and Goettsch (1931) and Wolf and Pappenheimer (1931).

The outbreak described by Asplin (1940) appears to constitute the first case recorded in the British Isles; six chicks were involved out of 112 chicks reared at Cambridge in three groups and on three different diets. Asplin gave a description of the symptoms and pathology which strongly supports his conclusion that the disease was probably identical with nutritional encephalomalacia. Common and Bolton (1944) reported severe incidence of an apparently identical condition in certain experimental groups of chicks reared in Northern Ireland. In their case the incidence of the condition was related to diet in that it was progressively more severe as the maize meal of a basal chick rearing mash was progressively replaced by ground dried potato slices. The fact that the results were not fully reproducible in subsequent experiments suggested that some other factor was operative as well as the dried potato slices in determining the severity of the incidence of the condition in this particular experiment.

The latter case relates, however, to an incidental outbreak among chicks maintained for other experimental purposes, and field records of nutritional encephalomalacia in the British Isles are curiously rare. The following case may, therefore, be of interest as constituting the first fully diagnosed case of nutritional encephalomalacia observed in Northern Ireland under ordinary farming conditions.

CASE HISTORY

The farmer concerned hatched 111 R.I.R. chicks on January 12th, 1946. These were fed from the third day on a proprietary chick mash compounded in accordance with the terms of a licence issued under the Feeding Stuffs (Control) (Northern Ireland) Order, 1944, S.R. & O., No. 114. This licence prescribes, among other things, the incorporation of two per cent. cod-liver oil (controlled mixture). Examination of the mash in question showed the presence of barley, oats, yellow maize meal, wheatfeed, extracted earthnut cake meal, dried skim milk and fish-liver oil (presumably "cod-liver oil, controlled mixture"), calcium carbonate and, almost certainly, common salt. The crude analysis was:—Moisture 12·4 per cent., protein 19·1 per cent., oil 6·25 per cent., N-free extract 49·1 per cent., crude fibre 5·0 per cent., ash 8·1 per cent. The total chloride was 0·58 per cent. expressed as NaCl. However, the farmer incorporated more cod-liver oil with this ration before using it, and analysis of a sample of the mash as actually used showed it to contain 11·0 per cent. oil.

With the exception that 17 birds died during the first week from "a chill," the birds made satisfactory progress during the first fortnight. On the 14th day one chick was observed to have "leg weakness" and died the same evening. During the succeeding nine days there were always about four to five chicks exhibiting severe symptoms of "leg weakness." Deaths occurred at a fairly even rate of two to three each day until the 24th day. There were 29 deaths in all from the 14th to the 24th day.

On the 23rd day the farmer changed the ration to a mixture of bread-crumbs, pinhead oatmeal and the unfortified chick mash in roughly equal parts. On that day there were four badly affected chicks; two of these were sent on the 24th day to the Veterinary Research Division of the Ministry of Agriculture for Northern Ireland, and the other two died on the same day. The latter were the only two chicks to die after the change of ration on the 23rd day, and no further severe cases developed. At six weeks the remaining chicks were making reasonably satisfactory progress. Recovery from the outbreak was apparently complete within a week of the change of ration.

When the two affected chicks were received at the Ministry's laboratory, one of us (H. G. L.) recognized the close similarity of the clinical picture to that of nutritional encephalomalacia as produced by use of a diet high in lard fat (unpublished experiments by R. H. C.). The clinical symptoms, which are striking and rather characteristic, are described in detail by Asplin (1940).

Both chicks were subsequently sacrificed for *post-mortem* examination, and the results of this examination confirmed the provisional clinical diagnosis of nutritional encephalomalacia (see below). The details of the pathology and histology may be found in the papers of Asplin (1940) and of Wolf and Pappenheimer (1931).

AETIOLOGY

It is now generally held that nutritional encephalomalacia and "exudative diathesis" (Dam and Glavind, 1938) are primarily related to a deficiency or insufficiency of dietary vitamin E. Dam *et al.* (1938) secured protection against experimentally produced nutritional encephalomalacia through the administration of synthetic dl-*a*-tocopherol. Other workers have confirmed these findings.

At the same time the unlikelihood of chick mashes being absolutely deficient in vitamin E and the apparently contradictory nature of much of the available evidence had previously tended to obscure this relationship. Rancidification of dietary fat with consequent oxidative destruction of dietary vitamin E has frequently been suggested as an explanation. This suggestion has received recent support by Mattill and Golumbic (1942), who observed that rancidity of dietary fat aggravated the symptoms of avitaminosis E (muscular dystrophy) in rabbits. Dam (1943), on the other hand, has shown that rancidity of the oil used was not responsible for the symptoms of avitaminosis E produced in chicks by diets containing excessive amounts (five per cent.) of cod liver oil. Fresh and partially rancidified oil were equally active in accentuating the susceptibility of the chicks, while completely rancidified oil and certain products of rancidification did not have such an effect.

Later work by Dam (1944, a and b) has revealed the important fact that susceptibility to symptoms of vitamin E deficiency can be accentuated or suppressed by alterations in the diet which are quite unrelated to its vitamin E content. Dam has shown that the protein : carbohydrate ratio, the dietary content of unsaturated fatty acids, the proportion and nature of the salts present (especially common salt) and the presence or absence of lipotropic substances all have an influence on the manifestation of symptoms of avitaminosis E. It is further noteworthy that the relative incidence of the two principal syndromes associated with avitaminosis E in the chick—nutritional encephalomalacia and exudative diathesis—is determined by the nature of the predisposing causes other than simple deficiency of vitamin E. These remarkable observations tend to give vitamin E a special place among the vitamins, in so much as symptoms of deficiency may be conditioned by a rather wide range of factors other than the actual supply of the vitamin. As is well known, the syndromes elicited by deficiency of vitamin E also display remarkable differences as between different animal species: the principal symptoms being resorption of the foetus in the female and sterility in the male in the case of the rat: muscular dystrophy in the rabbit and the duckling; and nutritional encephalomalacia and/or exudative diathesis in the chick. There seems little doubt that the puzzling apparent inconsistencies which confronted earlier workers on nutritional encephalomalacia in chicks were in all probability due to the operation of some of the various factors other than the dietary supply of vitamin E, which Dam (1944 b) has shown to influence the onset of the condition.

In the present case the ration was rather finely divided, and it would, at first sight, seem reasonable to ascribe the principal causal role to oxidative destruction of dietary vitamin E. However, in view of Dam's observations on the potent influence of highly unsaturated fatty acids in increasing susceptibility to avitaminosis E, we are inclined to ascribe the principal causal role in the present case to the inclusion in the diet of excessive amounts of highly unsaturated fatty acids from fish-liver oils. The analysis

of the diet fed shows that it probably contained some five per cent. "cod-liver oil controlled mixture" over and above some two per cent. originally incorporated by the compounder. Such a level of fish-liver oil fatty acids must be regarded as excessive and would be sufficient to account for the outbreak. It should be noted that the quality of the cod-liver oil used is not in question in this connection, but simply the excessive amounts. At the same time, it is not improbable that fish-liver oils may vary in their influence on the incidence of symptoms of avitaminosis E with variations in the amounts and nature of the unsaturated fatty acids present in the oil.

Practical Considerations

In practice the commonest forms of "leg weakness" in chicks which may arise from defects in nutrition are rickets, perosis (slipped tendon), ariboflavinosis (as shown by curled toe paralysis) and, possibly to a lesser extent, vitamin A deficiency. Rickets, perosis and curled toe paralysis are fairly easily diagnosed clinically. Vitamin A deficiency may be assessed to some extent by estimations of liver reserves of the vitamin (Ruben *et al.*, 1941). Where the available evidence rules out these causes, recourse should be made to examination of the brain for evidence of encephalomalacia, which we suspect to be of more frequent occurrence in the British Isles than might appear from the rarity of reported cases.

Macroscopic cerebellar lesions presenting a histological picture of ischaemic necrosis may sometimes provide a clue in obscure cases of "leg weakness." Such an approach may be specially useful in instances where absence of indications of dermatosis seems to rule out pantothenic acid deficiency, more especially as the main neuro-pathological lesion of pantothenic acid deficiency appears to be a myelin degeneration in the spinal cord and not cerebellar oedema and necrosis. So far as cerebellar lesions of nutritional origin are concerned, ischaemic necrosis of nutritional encephalomalacia would seem to be the condition most likely to be encountered; at the same time workers in this field will await with interest further details of the nutritional cerebellar disorder of chicks recently reported by Bird (1945) as not being associated with avitaminosis E.

Finally, it may be pointed out that evidence from the nature and composition of the diet needs careful interpretation, the factors at work being complex. Attention might, however, be paid to the nature and amounts of fish-liver oil used, if any, to the freshness of the ration and to its salt content.

Description of Affected Chicks

Chick A.—Livewcight 124 g.

Chick well developed and feathered but ataxic and unable to stand. When attempts were made to stand or walk the chick fell on its side and "paddled" with its legs. If attempts were made to help the bird to stand, the legs were extended and the chick fell over in a back somersault and paddled violently for a few moments when support was removed. Opisthotonos was not observed. The chick was able to move itself to its food trough and did so.

The bird was gassed and on *post-mortem* examination the muscles and viscera appeared normal. Exudations were not observed and the heart and pericardium were normal. (In exudative diathesis there is frequently an exudate in the pericardial cavity with some cardiac enlargement.)

The brain was fixed in ten per cent. formalin solution. The cerebellum was enlarged and the dorsal surface exhibited a typical greenish oedematous swelling about 5 mm. in diameter. Sagittal section showed this lesion to extend to a depth of some 2·5 mm. A second lesion in the posterior base of the cerebellum contained a few pinpoint haemorrhages. The typical arborescent appearance and the convolutions were less well defined than normal.

Sections (stained haematoxylin-eosin) revealed necrosis in the main lesions, with a strongly vacuolated oedematous molecular layer in the major affected areas. Oedematous vacuolation was observed over most of the line of junction of the molecular and granular areas, being very pronounced in the main lesions. All stages of degeneration of the Purkinje cells were observed, and completely normal Purkinje cells were restricted to the least affected convolutions. A few small haemorrhages were seen, as well as fairly frequent hyaline capillary thrombi. Some degeneration of the cells of the granular layer was observed, but this was not as readily distinguished in haematoxylin-eosin sections as the degeneration of the Purkinje cells; nuclear pycnosis in the granular layer, though present, was not a specially prominent feature.

Chick B. Liveweight 114 g.

Chick was in an advanced state of prostration and remained crouched with eyes shut for long periods. Fine intermittent tremors, especially of the legs, were noticeable. When roused, the general ataxic symptoms shown by chick A were observable, but were overshadowed by the prostration.

Massive doses of synthetic dl-*a*-tocopherol (Roche) were administered daily and the chick fed on a fresh mash. By the third day a considerable degree of recovery was apparent, and the chick was feeding greedily and able to walk, albeit still showing some defect of balancing powers and an unsteady gait. Since it appeared certain that the chick was recovering rapidly, it was gassed for *post-mortem* examination.

The cerebellum showed lesions, but on sagittal section it was noteworthy that the arborescence and convolutions were firmer and better defined than in chick A. This suggested that the lesion was regressing as a result of the change of diet and administration of massive doses of *a*-tocopherol. The microscopic picture resembled that seen in chick A. The dorsal aspect of the right cerebral hemisphere bore a large circular greenish lesion about 6 mm. in diameter. (Such cerebral lesions are rarer than the cerebellar lesions.) On section this was found to be about 4 mm. deep and 9 mm. in maximum diameter. The lesion was manifestly necrotic and semi-fluid. The left hemisphere seemed to be unaffected.

Summary

(1) The case history of an outbreak of "non-rachitic leg weakness" not associated with ariboflavinosis or perosis is presented in some detail.

(2) Clinical, pathological and nutritional evidence is adduced in support of the diagnosis of nutritional-encephalomalacia.

(3) Attention is drawn to the curious infrequency with which this condition has been reported in the British Isles.

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R.C.V.S. CENTENARY COMMEMORATION NUMBER

Commenting in its March issue on the publication of the above number of *The Veterinary Record*, *The North American Veterinarian* reminds its readers that this issue marked the one hundredth anniversary of the grant of the Charter of Incorporation of the Royal College of Veterinary Surgeons, also of the fact that publication in 1944 could not be made because of difficulties incidental to printing and paper shortage, and continues: "This interesting issue is composed of a number of unsigned contributions which deal with the development of the veterinary profession in the British Isles and with veterinary activities in Canada, India, South Africa, Australia and New Zealand. It contains discussions covering phases of veterinary practice in different parts of the British Isles and also consideration of practice in the treatment of the different species of animals, including canine practice, greyhound racing practice and poultry practice. Women veterinarians in the profession, incidentally, receive favourable consideration. The issue affords much information on the development of the veterinary profession in Great Britain, including numerous points of view, and the editorial staff of *The Veterinary Record* is to be congratulated for getting out this special number, handicapped as they were by war-time conditions."

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MILK YIELD

"Of the several interesting points in the statement made by the Minister of Agriculture in the Commons on milk yields during and before the war, none was more provocative than that the average annual yield in 1944-45 was 498 gallons, compared with 550 gallons in 1937-38," states the *Farmers' Weekly*, and adds: "True, Mr. Williams stated that the 1945 figure was expected to be 505 gallons, but even so there are implications to ponder over here. Is this reduced average the shadow cast by the strenuous and successful efforts to increase the total output? In other words, does it indicate a decline in the quality of our dairy cows as a result of stocking every single possible animal—including those which would normally be culled?"

The Benefits of Animal Experiments to Man and Beast.*

SIR LEONARD ROGERS,

K.C.S.I., C.I.E., M.D., F.R.C.S., F.R.C.P., F.R.S.

I am glad of this opportunity to speak to you on the immense relief of suffering of mankind and of animals that results daily from medical knowledge derived from animal experiments, which are safeguarded by the humane law of 1876. There are still a number of "anti-vivisection" societies in this country, which before the recent war had between them expended about £40,000 of charitable money yearly in attempts to prohibit such experiments. A study of their finance, since their case was rejected by the final report of the last Royal Commission (1912), revealed that subsequently to that emphatic decision against them, they have received about £750,000, three-fifths of which was furnished by legacies and investment, mostly from old ladies who cannot possibly be aware of the fact that the abolition of all experiments on animals can only result in a thousand-fold increase in the sufferings of animals as a whole. This wholesale activity on the part of the so-called "anti-vivisectionists" can be stopped only by the efforts of the medical and veterinary professions in educating the public with regard to the immense benefits that have resulted from animal experiments, and in combating the misleading and erroneous statements that have been made on numerous occasions by members of rival societies (see "The Truth about Vivisection," p. 67. J. & A. Churchill, Ltd. Price 2s. 6d.). In order to do this it is necessary to know, and be able to answer, the case put by the anti-vivisection witnesses before the Royal Commission of 1906-12.

The Anti-vivisectionist Case and its Rejection by Two Royal Commissions

Several hundred pages of the large volumes of evidence submitted to the second Royal Commission sets forth the case of the anti-vivisectionists. Since that date there has been no essential change, for they still repeat much of their rejected or disproved evidence. It falls under the following headings :—

(1) The so-called "Ethical" argument that it is "immoral" to inflict any suffering on animals even "to save many thousand times as much suffering" to animals, as well as to helpless children as in diphtheria (see pp. 141-150 of "The Truth"). Thus Rev. L. S. Lewis stated in his evidence : "*I would not have one mouse painfully vivisected to save the greatest of human beings nor the life dearest to me.*" In reply to a question on the use of anti-diphtheria curative serum he said : "*I would not allow my own child to have antitoxin administered to it to save its life,*" and he added, "*he would rather let his child die.*" In the case of diphtheria this means death by slow suffocation and toxaemia. It may be added that he was not a vegetarian, and therefore benefited by the only operations without anaesthetics on animals permitted in this country since 1876 to provide tender meat. When he was questioned about the use of preventive serum against rinderpest or cattle-plague (in this connection, the speaker, Mr. Lewis, and three others had testified as to the alleviation of suffering which resulted from the use of this serum) it was demanded that the use of this serum (and incidentally of all such methods of preventing and relieving the suffering of animals) should be prohibited by legislation ! I shall have to return to this point.

The Royal Commission turned down the "ethical" argument by the following unanimous finding (the reservation by three members often quoted by the anti-vivisectionists applied only to an administrative point, and the two anti-vivisectionist Commissioners signed this and other rejections of their case given below). "*After full consideration we are led to the conclusion that experiments on animals, adequately safeguarded by law, faithfully administered*" —which the Commissioners also found to be the case in Great Britain—"*are morally justifiable and should not be prohibited by legislation.*"

(2) Anti-vivisectionist Charges against the Scientists of Cruelty.—In 1906-8 the anti-vivisectionists brought numerous charges of cruelty against the scientists, in support of which they had had 30 years' working of the Act of 1876 in which to accumulate evidence. A number of these are quoted on pp. 55 and 67, etc., of "The Truth." They include charges by several witnesses of "baking" rabbits to death. After long inquiries this was found by the Commissioners to be founded on a few experiments in which rabbits were kept for a short time at 112° F.—less than the day shade temperature for months in enormous areas of India in which some 100 million people live a normal life ! The most frequent charge, which is still often made, was that animals are "tortured." The Oxford Dictionary defines torture as : "The infliction of excruciating pain . . . from a delight in watching the agony of the victim," a charge repeated to my knowledge in recent years. It will be shown later that our laws prohibit the infliction in any experiment of "severe pain that is likely to endure" : which alone could fairly be called "torture." Moreover, both Royal Commissions testified to the humanitarianism of the eminent medical scientists who gave evidence before them.

The most serious specific charge was brought by an official of an anti-vivisection society when he accused the scientists of selecting the dog "for extensive, and peculiarly revolting and painful experimentation, and also for demonstrations of a prolonged and agonizing nature before classes of students" ! In reply to a question of a Commissioner this witness admitted that he had no evidence in support of his criminal charge. Yet that very statement was subsequently repeated year after year in a petition to Parliament, claimed to have been signed by nearly a million people, mostly kind-hearted old ladies. A question as to its truth addressed to the Home Secretary elicited this answer in the House of Commons : "*No, Sir, no such experiments would be allowed, and there is no evidence whatever that any have taken place.*"

The Royal Commissioners signed the following statement without any reservation (including two strong supporters of the anti-vivisectionists) : "*After careful consideration of the above cases we have come to the conclusion that the witnesses* (anti-vivisectionist) *have either misapprehended or inaccurately described the facts of the experiments.*" Notwithstanding this finding these charges have been repeated, including the one on baking animals alive.

British Law Safeguarding the Infliction of Pain in Animal Experiments

Scientists do not assert that no pain is inflicted through experiments on animals, although I myself have twice been falsely accused of so doing. Their position was clearly stated thus in the evidence of Lord Justice Fletcher Moulton, F.R.S. : "Your duty is to take that line which produces the minimum total pain, and whether the pain is inflicted pain, or whether it is preventible pain which is not prevented, is in my opinion one and the same thing." The inference is that the comparatively small amount of pain inflicted during experiments on animals must be weighed against the many thousand times greater amount of pain to animals that is prevented every year as the result of knowledge gained, *e.g.*, the preparation and standardization of sera and vaccines, through necessary animal experiments. You must therefore know the following safeguards furnished by our laws.

No licence is issued by the Home Secretary until a statement by the applicant of his reasons for expecting some advance in medical knowledge may result from them is endorsed by a panel of eminent scientists appointed by the Home Secretary. Experiments must be done in a place licensed by the Home Secretary, whose medical inspectors make several thousand visits yearly *without notice* and must see every experimental animal. Every operation must be done under an anaesthetic, and in those performed under a licence alone the animal must be killed while still unconscious so that it is saved the pain of ultimate death from injuries or disease. An additional special licence B is required to permit an animal to recover from the anaesthetic when it is necessary to watch the results. Operative experiments form under 5 *per cent.* of the whole.

The remaining 95 or more per cent. under Certificate A are inoculations or feeding experiments not requiring any anaesthetic. For many years past the Home Secretary, in his annual reports, has stated : "*In a very large number the results are negative, and the animals suffer no inconvenience whatever from the inoculation. These experiments are therefore entirely painless.*" Moreover, experiments of every kind are subject to a stringent regulation which enacts that : "*If an animal at any time during the said experiments is found to be suffering severe pain which is likely to endure, such animal shall forthwith be painlessly killed.*" The non-operative inoculation and feeding experiments which are done under certificate A number several hundred thousand a year, and are commonly quoted by the anti-vivisectionists as "experiments without anaesthetics," and no indication is given that not one of them was an operation. In one instance an anti-vivisection society in an appeal for support broadcasted a statement that 199,612 animals had been "operated on without an aesthetic" in one year : in fact, they were all inoculations and feeding experiments quoted from the Home Secretary's annual report. In a few such experiments some after pain may result, but the head of the laboratory which does most such experiments informs me that *in a large majority no pain is inflicted.* The last Royal Commission also found that : "*We are satisfied by the evidence that in the great majority of the experiments under the Act the animals do not exhibit any symptoms of severe pain.*" Yet repeatedly the total number of experiments in the annual reports of the Home Secretary have been cited in opponents' letters to the Press as cases of animals being "tortured."

* Abstract of address before the Royal Counties Division, N.V.M.A., at Reading, November 30th, 1945.

Summary Regarding Pain in Experimental Animals.—(*a*) In no animal is severe and prolonged pain inflicted. (*b*) In the great majority of the animals no severe pain is inflicted. (*c*) "In a very large number" of the 95 or more per cent. of inoculations and feeding experiments under certificate A, which alone are done without anaesthetics for obvious reasons, the experiments are "entirely painless" (Royal Commission and Home Secretary).

The Benefits to Man and Beast due to Animal Experiments

Turning to the other side of the balance sheet, it would require an encyclopaedia to record all the evidence. I can therefore only point out that nearly all the physiological, bacteriological and modern therapeutical scientific basis of modern medicine has resulted from animal experiments, and give a few examples which will suffice to refute the opposition statements to the contrary, which can deceive no knowledgeable and open-minded person at the present day. In fact in recent debates the anti-vivisectionists have usually made no serious attempt to meet this part of the case, but have fallen back on their "ethical" contention which was unanimously rejected by both Royal Commissions.

(*a*) *Physiology.*—The great biologist, Charles Darwin, in his evidence given in 1875 stated that "he could not think of any one step which has been made in physiology without their (animal experimental) aid." That remains true from Harvey's discovery of the circulation of the blood to more recent advances on internal secretions (pituitrin, adrenalin, insulin) and vitamins.

(*b*) *Bacteriology.*—The whole of our knowledge of the causative organisms of scores of diseases of man and beast, and of all the curative and preventive sera and vaccines is the result of animal experiments.

(*c*) *Therapeutics.*—The 1912 Final Royal Commission report accepted the evidence of the medical scientists that, in the previous 40 years, there was only one drug "introduced as the result of clinical observation," to which our opponents would limit us. "All the rest" resulted from animal experimentation; they included the *soporifics, the local anaesthetics and the analgesics*: that is nearly all the drugs, except the habit-forming opium, in general use for the relief of pain in man and in animals. In the 33 succeeding years specific remedies have been discovered for the care of literally millions of cases of yaws, African sleeping sickness, the deadly kala-azar of India (the case mortality of which has been reduced from 96 per cent. to 5 per cent.) and for malaria. After the Japanese captured 90 per cent. of the world's supply of quinine in Java, the Allies could not have won the war in Burma, New Guinea and the Southern Pacific in general without the aid of the newer drugs which have been discovered through animal experiment in recent years. The sulphonamides and penicillin are further recent examples.

The Home Secretary's return for 1935 shows that 41·8 per cent. of all the animal experiments under certificate A were performed "*for the preparation and testing of antitoxic sera and vaccines, and for testing and standardizing of drugs,*" without which many million doses yearly of our most potent remedies could not be made and used with safety. Is it in the public interest that the anti-vivisectionists should deprive us of all these aids, when in almost all no severe pain, and in a very large number no pain at all, is inflicted on the animals in preparing them?

(*d*) *The Incalculable Saving of Suffering to Animals through Preventive Inoculations.*—The speaker has shown that in 1929-30, 2,096,868 cattle in India were inoculated against the three main epizootic diseases—rinderpest, haemorrhagic septicaemia and black-quarter, with one-thirty-sixth the mortality among control uninoculated cattle. In British India and Africa in 1931-37, 50,000,000 cattle and sheep were protected. Of these, certainly over 10,000,000 were saved from severe and prolonged suffering. Yet anti-vivisection witnesses demanded that animals should be deprived of all such benefits (*British Medical Journal*, March 18th, 1939). There are many other animal diseases equally benefited through animal experiments ("The Truth," pp. 154-170) which I have not time even to enumerate. When I quoted the above data in correspondence the non-medical director of a leading anti-vivisection Society replied: "*It is immoral to inflict any suffering on animals, even to save many thousand times as much suffering to animals and to mankind.*" The medical and veterinary scientists are, therefore, the true friends of animals, and the following conclusion of my book (p. 174) is fully justified.

"*The so-called anti-vivisectionists, however well meaning they may be, and erring, let us hope, solely through ignorance of, or blindness to, the overwhelming scientific evidence, are in reality persistently attempting the most wholesale cruelty to man and beast in the history of the world.*" If that fact could be brought home to all their supporters their futile waste of charitable money would soon cease.

(*e*) *The Verdicts against the Anti-vivisectionists of Two Royal Commissions and the High Court of Justice.*—The Royal Commission of 1875 found that "the greatest mitigations of human suffering have in part been derived from such (animal) experiments."

The Second Royal Commission in 1912 found that: Notwithstanding some failures, "valuable knowledge has been acquired in regard to physiological processes and the causation of disease, and that useful methods of prevention, cure and treatment of certain diseases have resulted from experimental investigations upon living animals," and that "suffering has been reduced in man and in lower animals." Those, as well as other findings already quoted, were signed by all the surviving Commissioners, with a reservation by the medical anti-vivisection supporter regarding the amount of suffering so prevented.

In December, 1943, the Special Commissioners of Income Tax heard the evidence of the Medical Director of an anti-vivisection society, and of "A number of very distinguished men" as witnesses for the Crown. They accepted the evidence of the latter "in its entirety" to prove the great value of experiments on animals, and found that: "*On balance, the object of the Society, so far from being for the public benefit, was gravely injurious thereto, with the result that the Society could not be regarded as a charity.*" They were, however, unable to overrule a contrary finding of 1895, but on appeal to the High Court of Justice their finding on the facts was endorsed by Mr. Justice Macnaughten, who found *that the success of the Society in the attainment of the total abolition of vivisection "would be gravely injurious to the community"* (see *British Medical Journal*, September 1st, 1945, p.291). Those findings are subject to a final appeal to the House of Lords.

THE "DOPING" OF RACING ANIMALS

Several cases have been reported recently of racing greyhounds having been doped with the idea of interfering with their running. "The drug most often used, I am told," writes "Onlooker" in *The Pharmaceutical Journal*, "is chlorbutol, and the only thing to be said in its favour is that probably the animals do not suffer any lasting harm. A hundred years ago, things were very different. In 1812, a man, one Dan Dawson, was actually hanged at Cambridge gaol for poisoning racehorses with arsenic. His confederate was an ex-dispenser from Guy's named Bishop, who turned King's evidence to save his own skin. Henry Hall Dixon ('The Druid'), that prince of sporting writers, described by Kipling as 'half sportsman, half poet,' tells of a number of racehorses which were poisoned in the 1820s. Marcus, the favourite one year for the St. Leger, was put out of action with arsenic. 'A pony and one or two other racers who had stood at the same inn died and were found on dissection to be full of arsenic.' Another horse, Ralph, was poisoned before the Ascot Cup. 'He won, but pulled up in a terrible state of gasping and the perspiration and distension of the nostrils never ceased.' He died of the poison. Lanercost was also poisoned before the same race in another year; 'his action gave the impression that his back was broken.'"

* * * * *

Professor A. V. Hill, speaking on the responsibilities of scientists in modern society at a conference on science and the welfare of mankind at Beaver Hall, London, urged scientists to refuse to co-operate in tasks in which they or their representatives were not allowed a reasonable share or partnership in the responsibility of deciding on the purpose, policy or probable result of their work.

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LONDON VAN HORSE PARADE REVIVED

The public accorded a warm welcome to the return of the famous van horse parade at Regent's Park on Easter Monday, when, after a lapse of seven years the vanner was seen again in all its impressiveness by thousands of Londoners, who crowded the Inner Circle to watch the judging.

While the entry totalled 200, compared with 554 in 1939, this does not mean that there are now fewer light draught horses employed in the London area. It is believed that London has more horses than before the war. Petrol restrictions caused many traders to turn to the horse for short distance delivery work. The quality of the horses and the general smartness of the turnouts were considered to be well up to pre-war standard. First and second class awards are provided, and such was the general condition of the exhibits that each received the first class award. The exhibitors included brewers, dairymen, bakers, butchers and greengrocers. A gay Bank Holiday note was introduced by the appearance of pearly kings and queens with their smartly turned out equipages. There were quite a number of pair turnouts and a few four-in-hands. A well-matched team of four skewbald ponies attracted much attention.

The prizes were presented by Frances Lady Daresbury, President of the Society.

THE VETERINARY RECORD
April 27th, 1946

THE PROFESSION, THE NATIONAL ADVISORY SERVICE AND THE CONTROL OF MILK

TWO recent announcements in these columns will have given our readers much food for thought. We refer to the details of the proposed staffing of the National Advisory Service,[1] and to the report of the meeting of the Association's delegation with Sir Donald Vanderpeer at which the administration of the Food and Drugs (Milk and Dairies) Act, 1944,[2] was discussed.

As a result of the changes which are proposed, the National Advisory Service will assume a more important place in the agricultural community, one which is exemplified to some extent by improved conditions of service. It is apparently expected to advise farmers upon all aspects of farming and horticulture, except the strictly veterinary, using this word in its narrowest sense.

The scope of the advice to be offered the farmer is to be extended to include nutrition, chemistry, animal husbandry, poultry husbandry and grassland management, as well as certain other matters of less direct interest to the veterinarian. Although the veterinary investigation officer is to continue to work in close collaboration with these advisers, his special position as a member of a profession already actively serving the farming community through the practitioner, is recognized by his inclusion in the future within the framework of the Animal Health Division, and being under the control of the Director of the Ministry's Laboratory at Weybridge. On the whole the profession may welcome this arrangement, but there are certain dangers. With the appointment of advisers in animal husbandry, nutrition, chemistry, bacteriology and poultry husbandry, as distinct from the veterinary investigation officer, it is clear that considerable overlap of duties can arise, and substantial inroads may be made into the accepted role of the veterinary surgeon as adviser on matters of animal health and disease.

We might have viewed the creation of these new positions with a greater degree of equanimity had we been confident that a sufficient supply of appointees with the necessary qualifications and experience was available from among the ranks of trained agriculturalists. A considerable and intimate contact with the training and qualifications of agricultural graduates from British universities and agricultural colleges leaves us convinced that in none is the width and depth of training and experience surpassed by that received by the modern veterinary surgeon. It can be anticipated in consequence that the advice offered by some new appointees to these posts may be either irregular in quality or, perhaps, only elementary. Wise direction and great tact will be essential in those entrusted with the organization and administration of the various provinces.

In this connection we may remind members of the profession that the Association has had an assurance from the Permanent Secretary to the Ministry of Agriculture that veterinarians will be considered for appointment equally with other applicants for the Advisory posts in Animal Husbandry, Nutrition, Bacteriology and Poultry Husbandry, etc., when these appointments are being made.

It is obviously essential that the hopes and aspirations of the profession as a whole should be fully realized, and that the profession should be strongly represented in the higher ranks of the Ministry. The future development of the V.I.O. service and its participation in the extended field of work envisaged, together with the pressing need for improved laboratory services for the practitioner, are matters of urgency. A vigorous and wise leadership is undoubtedly essential. The Director at Weybridge, with already such a multitude of onerous duties in connection with research and field work, is to have yet another important responsibility thrust upon him.

The future part which the Animal Health Division, including V.I.O.s, can take in the general effort to improve the efficiency of farming, is not only affected by the impending development of the National Advisory Service, but it will also be affected by the activities of the new division of Livestock Improvement and Dairy Husbandry. This Division will presumably be manned by animal husbandry officers and dairy technologists, and we shall find yet another group of officers waiting upon the farmer. We are informed that the duties of the Ministry in so far as they implement the Food and Drugs (Milk and Dairies) Act, 1944, comprise three main aspects of milk production. These are "(1) the economic efficiency of milk production, (2) quality production involving methods, equipment and buildings as well as animal health questions, and (3) the animal health problem proper." The permanent Secretary of the Ministry considers "these problems were too wide in scope and too complex to be embraced entirely by the Animal Health Division," and consequently the new Division of Livestock Improvement and Dairy Husbandry has been organized "to weld together the veterinary aspects of milk production and the advisory work of the National Advisory Service." The profession been assured that these will be in the nature of parallel services whose work will be co-ordinated administratively by the new division which has been formed. It is claimed that this new arrangement will be conducive to administrative efficiency and an assurance has been given that the N.V.M.A. will be fully consulted throughout in the arrangements to be made. The Association will willingly cooperate, but we cannot but regret the change in the Minister's plans as we are convinced that as the veterinarian alone is concerned with all three aspects of the work, efficiency will not be achieved until the complete service is brought under the supervision of the Chief Veterinary Officer.

[1] *Vet. Rec.* **57**. 582.
[2] *Ibid.* **57**. 679.

CLINICAL COMMUNICATION

Fatal Malignant Melanomata in a Grey Cart Gelding

P. E. EMSON, M.R.C.V.S.,
Bourne, Lincs.

Subject.—Aged grey (nearly white) cross-bred Percheron gelding.

History.—This horse had been employed in general work on a large farm since he was four to five years old; his age at death was believed to be approximately 20 years. A few weeks before death, swellings placed laterally and superior to the prepuce were observed. These were diagnosed as tumours, the farm foreman being told that they were not likely to interfere with the horse's usefulness.

On the morning of the horse's death he manifested symptoms which the foreman and the horseman took to be those of colic. These symptoms persisted for about six hours, when collapse and death occurred.

Post-Mortem Examination.—The spleen and liver were enormously enlarged, weighing 48 lb. and 72 lb. respectively. The substance of both spleen and liver was almost completely composed of multiple melanomata. Specimens were submitted to the Pathological Department of the Royal Veterinary College, and Mr. Cotchin very kindly reported:—"Frozen sections of the material from the aged grey cart gelding support a diagnosis of malignant melanoma with metastases."

Discussion.—The case is interesting on account of the extreme size of the organs involved and the absence of any apparent interference to the horse's health or working capabilities up to a few hours before death.

ABSTRACTS

[The Serological Diagnosis of Johne's Disease in Sheep. Sigurdsson, B., Vigfusson, H., and Theodors, S. (1945.) *J. comp. Path.* **55**. 268-276.]

In this work, the authors have compared the efficiency of the intradermal test and the complement fixation test (C.F.T.) in the diagnosis of Johne's disease in sheep. The intradermal test was carried out with two samples of PPD johnin, injected simultaneously into opposite limbs. Two successive injections of 0·1 ml. were given in each case, separated by an interval of 48 hours. The reaction was recorded 24 hours after the second injection. For the C.F.T. the antigen was prepared from the intestinal mucosa of infected sheep. Before use it was titrated against sera from infected and healthy sheep, in order to determine the optimum concentration.

The C.F.T. was found to be a satisfactory diagnostic agent for Johne's disease in sheep, and proved to be superior to the double intradermal test, in that the latter failed to detect a large proportion of the infected animals.

In an infected flock of 55 sheep, 30 animals out of 31 proved on *post-mortem* examination to be infected, gave positive reactions to the C.F.T. (The exception was not adequately tested.) The sera of four additional sheep in which lesions were not detectable were also strongly positive. One hundred and eighteen sheep from non-infected areas were tested as controls. Of these only four reacted positively to the C.F.T., and then only weakly. Thirty-nine sheep of the infected flock were tested with johnin intradermally. Only about 50 per cent. of the infected sheep reacted. The intradermal test is subject to the same disadvantages as the tuberculin test. False negative results occur at the initial and terminal stages of infection and false positives are not uncommon.

Nor is the complement fixation test absolutely specific. Positive reactions were given by sera taken from active cases of human tuberculosis and leprosy. This difficulty is liable to complicate the test when it is used in cattle.

I. W. B.

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[Studies on Swine Enteritis. II. Salmonella and Other Enteric Organisms Isolated from Diseased and Normal Swine. Levine, N. D., Peterson, E. H., and Graham, R. (1945.) *Amer. J. vet. Res.* **6**. 242-246.]

Swine enteritis, unassociated with swine fever, may arise from various causes, among which are recognized bacterial agents and nutritional deficiencies. This paper comprises observations on the isolation and pathogenicity of the bacteria which were found in the colon and viscera of swine dying from a variety of diseases such as swine erysipelas, swine fever, necrotic enteritis and dysentery.

Of 227 animals examined, approximately 55 per cent. showed gross inflammatory lesions of the lower intestinal tract. Organisms of the Genus Salmonella were isolated from 13 per cent. of the total number and from 17 per cent. of those showing intestinal lesions. Other enteric organisms—Eberthella and Shigella, Proteus, Paracolon bacilli and members of an unclassified group—were isolated from 153 animals. The authors failed to find enteric organisms in 65. Of these 65, 25 showed gross lesions of the lower digestive tract.

S. cholerae suis var. *kunzendorf* was the only organism isolated with consistency from the viscera (liver, spleen and heart blood), and is probably the only organism, of those isolated, with marked invasive powers. It was considered that the other species of Salmonella isolated, and the enteric organisms were commensals, normally present in swine.

S. cholerae suis var. *kunzendorf* and *S. typhimurium* proved infective to swine when given orally in large doses. *S. bareilly*, *S. give*, *S. illinois* and the other enteric organisms failed to infect healthy swine by this route.

Of 194 strains of Salmonella isolated from swine during the preceding four years, 134 were *S. cholerae suis* var. *kunzendorf*, three were *S. cholerae suis*, 16 were *S. typhimurium*, 15 were *S. bredeney*, the remaining 26 strains being distributed over eleven species.

Agglutination tests of serum samples, with the H antigens of *S. cholerae suis* var. *kunzendorf*, *S. typhimurium* and *S. bredeney*, failed to reveal active infection with the corresponding organisms, although approximately one-third of the animals tested showed gross lesions of the lower digestive tract.

I. W. B.

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Weekly Wisdom

In human personality genuine greatness and humility are almost always closely linked together: or as it might even more truly be said, they are not two qualities but one.—Anon.

REPORTS

[Northern Rhodesia: I.—Report of Veterinary Department for 1944. II.—Report of the Game and Tse-tse Control Department for 1944.]

I.—Mr. J. H. N. Hobday, O.B.E., Director of Veterinary Services, provides another progressive report on the activities of his department during the year under review. War conditions caused consumption to outpace production and rationing of meat and dairy produce was perforce introduced and prices of livestock were controlled (based on grade and quality) to prevent inflation. A Government abattoir and cold storage commenced operations in Livingstone to assist in accelerating the eradication of pleuro-pneumonia (contagious bovine) from Barotseland, and some 5,236 cattle, therein processed, furnished a good supply of meat to the Copperbelt.

Considerable assistance to the general administration of the department was provided by the acquisition of a departmental aircraft which covered over 25,000 miles during the year, operating from Mazabuka.

In spite of staff shortage and increased duties the general standard of animal health was maintained. Eradication of contagious bovine pleuro-pneumonia from Barotseland had progressed so satisfactorily that the disease was regarded as no longer enzootic. An isolated outbreak of foot-and-mouth disease was successfully dealt with by wholesale sub-mucosal inoculation of the virus; subsequent freedom from the disease was confirmed by the introduction of susceptible cattle. Phenanthridinium compound No. 897 as a trypanocide for cattle proved as successful as already reported in Kenya and Tanganyika. Field observation supported the belief that mechanical transmission (*i.e.*, by flies other than tse-tse) was the cause of much trypanosomiasis in N. Rhodesia, but laboratory experiments were not so convincing. [It would be very interesting to know if *G. pallidipes* as a carrier, in suspect "mechanical transmission" outbreaks, has been positively eliminated, as this is a most elusive fly and travels and *finds* cattle far from its normal habitat.] Anthrax and blackquarter sporadics were controlled by vaccination. Of tick-borne diseases "heartwater" proved most serious. Of non-scheduled diseases a usually benign condition formerly known as "pseudo-urticaria" (or "lumpy disease" by stockowners) reappeared in more virulent form and caused severe losses to some ranchers and dairy farmers.

Short notes are contributed by Mr. R. D. Hodgins on Animal Husbandry schemes.

Dr. P. L. Le Roux contributes a very interesting section on laboratory activities. Apart from a considerable routine of diagnostic service, investigation into the following conditions was made: (*a*) Certain aspects of contagious bovine pleuro-pneumonia, (*b*) the mechanical transmission of trypanosomes by blood-sucking flies other than the tse-tse under ranching conditions in an area free from *G. morsitans*, (*c*) the reactions of *Trypanosoma congolense* to phenanthridinium compound No. 897, and (*d*) the aetiology and curative treatment of pseudo-urticaria. Of perhaps most general interest are his findings, subsequent to large-scale immunity tests of cattle vaccinated against contagious bovine pleuro-pneumonia. In a war-time, abridged report of this nature his conclusions are perforce presented without experimental data—which is indeed unfortunate as they are certainly stimulating and open up new channels and aspects of the disease for further research and consideration. He has certainly broken away from several practically accepted ideas on the subject.

Marketing notes are interesting but essentially of local interest.

The African Veterinary Assistants' School at Mazabuka progressed very favourably.

Statistics concerning Livestock Population and export and import of livestock and their products conclude the report.

II.—Mr. T. Vaughan Jones, Acting Director of this department, has produced a report of even more general interest than usual—including, as it does, notes on work carried out in collaboration with both the Medical and Veterinary Departments—and "Tse-tse" control is now perhaps a major task in his own departmental activities. Of direct veterinary interest was the creation and maintenance of a game-free zone between N. Rhodesia and Tanganyika Territory as a barrier against the southwards spread of rinderpest (cattle plague) through the medium of game animals: this work was carried out in collaboration with the Tanganyika Game Department north of the border. An emergency wooden palisade some 160 miles in length had been erected to safeguard the border some three years earlier and the respective game departments had been allotted the rather difficult task of breaking game continuity during the naturally short life of such a fence. At the time of this report the original fence had practically disappeared but it was considered that a game-free area up to 25 miles in depth, south of the fence, had been virtually created and was being maintained by regular armed patrols.

Tse-tse control is no sinecure but Mr. Vaughan Jones contends that "simple broad formulae for tackling tse-tse, understandable by the average field officer, are for practical purposes more valuable than formulae requiring lengthy and highly technical observations, notwithstanding that the simple formulae may involve including some work which on an accurate scientific assessment might have been avoided. . . . One object of research should thus be to achieve not only technically sound formulae, but simple formulae, if necessary discarding high exactitude to gain that end." Experience gained during 1944 has indicated that "'discriminative clearing' carried out simultaneously with game destruction may have a more rapid effect than game destruction only. . . . It is hoped that the need to make a clean sweep of all game in any given area may be found to diminish in proportion to the speed with which the tse-tse can be eliminated. . . ." Conservative costs for reclamation from this pest are given, but it is more often lack of man-power than lack of funds that decides in this problem. "While granting that both D.D.T. and phenanthridinium are likely to be of first-rate importance as ingredients in the general cure, one cannot expect either, or both together, to be the panacea for all ills arising from tse-tse."

Close collaboration was maintained with the tse-tse control authorities in S. Rhodesia and Tanganyika.

Items of medical interest are found under the section dealing with fisheries and fish farming experiments. Observations were recorded in the various mosquitoes found breeding in various types of pools and seepage areas with varying flora and fauna and certain rough observations were also made on snails in connection with human bilharzia. Preliminary experiments were also carried out on the production of fish meal and oil from local fresh-water fish; the ubiquitous "Barbel" (*Clarias sp.*) gave a high yield of oil by a simple process of boiling down with salt and skimming off the oil product. The economic potentials of game preservation and, in particular, fisheries are stressed.

S. A. E.

Questions and Answers

"Questions and Answers" will be published on alternate weeks.

The submission of questions for inclusion in this column will be welcomed: they can relate to any aspect of veterinary work. For purposes of record, each question is numbered, and those submitting questions are required to furnish (not for publication) name and address.

Answers to readers' queries represent exclusively the personal opinions of the writers, and criticism of the replies will be appreciated.

All communications should be addressed to the Editor.

Compensation for a Purchase at an Auction Mart

Q. CLV.—*A cow was sold "Time up and correct" at an Auction Mart; a few days later she calved and developed a cough; the animal lost condition and, one month after she was bought, she was taken under the Tuberculosis Order as having a chronic cough with positive sputum: Is the buyer entitled to compensation from the seller?*

A.—Warranties relating to livestock sold at auction are invariably defined in the auctioneer's conditions of sale and time limits, extending up to 48 hours, are set within which a purchaser must lodge his complaint in respect of any suspected breach of warranty. Local variations occur both in the type of warranty and the time limits allowed, but purchasers of stock are taken to have acquainted themselves with the conditions of sale which are displayed publicly or printed on the catalogue—although they are seldom read—and to have agreed to abide by them.

In general, in cases such as that in question, unless a complaint is lodged within the permitted time limit an action for breach of warranty will not lie, and the purchaser must keep the lot with all its faults. Thus the answer to the question "is the buyer *entitled* to compensation" is "No."

But it is perfectly clear from a veterinary standpoint that the cow in question must have been affected with pulmonary tuberculosis at the time of the sale, although it displayed no obvious clinical symptoms, and it can be argued that without a doubt she was suffering from a *latent defect*.

Proceeding on this assumption, the purchaser could take legal action under one of the following heads:—

(*a*) First, for rescission of the contract on the grounds of misrepresentation, as equity refuses specific performance of a contract where consent is obtained by a misrepresentation, *though innocent*. But he cannot sue for damages in tort unless he can prove that the misrepresentation was fraudulent or made without belief in its truth.

(*b*) Secondly, he might sue for damages for a breach of warranty which did not entitle him to return the animal, as was done successfully in Barnes *v.* Knott (*Vet. Rec.* No. 45, Vol. 55, pp. 443-444) where the purchaser of a horse apparently sound when sold in a public fair, and subject to the auctioneer's conditions of sale, developed acute pleurisy from which it died, which was found on *post-mortem* examination to be a "flare-up" of an old-standing pleurisy as evidenced by the presence of chronic pleural adhesions.

Thus, whilst not entitled to compensation as of right, the purchaser may *seek* it through the medium of the courts.

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Arecoline Acetarsol as an Anthelmintic for Cats

Q. CLVI.—*Is arecoline acetarsol a safe anthelmintic for cats? What drugs, dosage and method are recommended for the treatment of round worm and of tape worm infestation of cats and kittens?*

A.—Arecoline acetarsol is considered to be a safe taeniacide for adult cats; its administration is not recommended in cats under one year of age. Dosage is estimated on the basis of one tablet (18 mg.) per 15 lb. body weight, but in view of the great individual variation in response to this drug, it is always advisable to give a small average dose on the first occasion to assess the tolerance of the particular animal. It is a good rule to commence with a dose of 9 mg. (half tablet) for an average cat, repeating with a slightly larger dose after an interval of 10 to 14 days if the first is not effective. Drugs of this group must not be given on an empty stomach, hence starvation prior to dosing is contra-indicated. A milky diet the day before dosing is advantageous. Cats should be given the computed dose three hours after a meal.

Other drugs used as taeniafuges in cats include areca nut (usually as the proprietary preparation "Taenaline"), Kamala and pellietrine.

The only safe drug for use in round worm infestation of kittens would appear to be santonin, in combination with calomel. In adult cats tetrachorethylene is occasionally used. The dosage and methods of administration of these drugs may be found in the standard text-books of veterinary materia medica and pharmacology.

QUESTIONS IN PARLIAMENT

Dog Distemper Prophylactics

Sir R. Glyn asked the Minister of Agriculture if he is aware that the firm of Burroughs and Wellcome are no longer producing distemper prophylactics for the commercial distribution of distemper virus vaccine and serum; and what steps he intends to take to make supplies available to veterinary surgeons, in order to implement the recommendations of the Distemper Council.

Mr. T. Williams: I am informed by Messrs. Burroughs, Wellcome & Co. that the issue of dog distemper prophylactics has temporarily been suspended owing to certain production difficulties. The firm hope to resume the issue of supplies in the near future.

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Ponies (Ill-treatment Prosecutions)

Mr. Peter Freeman asked the Minister of Fuel and Power how many cases have been brought to the courts in each year since 1940 for ill-treatment to horses and ponies working in mines; in how many cases have convictions been successful; in how many cases have warnings, fines or imprisonment, respectively, been imposed and what action he proposes to take to reduce such cases of cruelty.

Mr. Shinwell: The information is as follows:—

Care and treatment of animals or cruelty to animals: contraventions of the Coal Mines Act, 1911, and the Protection of Animals Act, 1911.

Year.	Prosecutions (number of separate charges).	Number of Convictions.		
		Fines.	Imprisonment.	Warnings.
1940	13	11	1	—
1941	20	19	1	—
1942	36	32	1	—
1943	29	26	2	—
1944	41	36	3	—
1945	23	23	—	—

Seven Inspectors of Horses devote their whole time to enforcing the law and the other Members of the Mines Inspectorate give part of their time. The law is generally well observed and the measures of enforcement are adequate.

NOTES AND NEWS

Diary of Events

May 2nd.—Meeting of the Lancashire Division, N.V.M.A., at Liverpool (Stanley Abattoir), 2.30 p.m.
May 2nd.—Meeting of the Central Veterinary Society, at the Conway Hall, W.C.1, 2 p.m.
May 3rd.—Meeting of the Welsh Branch, N.V.M.A., at Aberystwyth, 11.30 a.m.
May 4th.—Meeting of the Biochemical Society at Oxford (University Museum), 2 p.m.
May 7th.—R.C.V.S. Animal Management Examinations, commencing in London.
May 7th.—R.C.V.S. Council Elections—Last date for Nominations.
May 7th.—Meeting of the Southern Counties Division, N.V.M.A., at Salisbury (The White Hart Hotel), 2 p.m.
May 11th.—Annual Meeting of the Association of Veterinary Inspectors, at Friends' House, Euston Road, N.W.1, 2 p.m.
May 15th.—Spring Meeting of the Eastern Counties Division, N.V.M.A., at Colchester, 2.15 p.m.
May 21st.—R.C.V.S. Council Elections—Voting Papers issued.
May 28th.—R.C.V.S. Council Elections—Voting Papers to be returned.
June 4th.—R.C.V.S. Annual General Meeting.
June 4th.—R.C.V.S. Committee Meetings.
June 4th.—Annual General Meeting, Victoria Veterinary Benevolent Fund, 10, Red Lion Square.
June 5th.—R.C.V.S. Committee Meetings.
June 6th.—R.C.V.S. Committee and Council Meetings.
June 27th.—R.C.V.S. Written Examinations begin.
July 1st.—R.C.V.S. Oral and Practical Examinations commence.

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R.C.V.S. Council Election

Addresses of Candidates

The addresses of candidates for election to Council, R.C.V.S., will be published in our issue of May 18th. Those who desire to submit such addresses for publication are requested to note that they must be received by the Editor of *The Veterinary Record*, 36, Gordon Square, London, W.C.1, not later than Monday, May 6th, and that they must be limited to 250 words.

The following additional nomination for election to the R.C.V.S. Council has been received: Dr. J. T. Edwards, of Pirbright, whose proposers are Mr. L. E. W. Bevan and Mr. J. F. D. Tutt.

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PERSONAL

We learn with pleasure that Major W. F. Aston, M.R.C.V.S., of Shrewsbury, has been re-elected a member of the Shropshire County Council. Major Aston has been the sitting member for the Condover Division for nine years.

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Birth.—Wyper.—On April 13th, 1946, at Woodhayes Nursing Home, Exeter, to Peggie, wife of David Wyper, M.R.C.V.S., a son, David Andrew Crawford.

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Marriage.—Wickens—Wheat.—The wedding took place at Hampton-in-Arden Parish Church, on March 23rd, 1946, of Captain John T. Wickens, R.A.V.C., younger son of Mr. and the late Mrs. T. Wickens, of Maidstone, and Mary, elder daughter of Mrs. and the late Mr. J. Wheat, of Catherine de Barnes, Warwickshire.

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Will.—Mr. Donald Campbell, M.R.C.V.S., of 80, Hamilton Road, Rutherglen, Principal of the Glasgow Veterinary College, left £4,671.

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R.C.V.S. OBITUARY

Aitken, John James, C.M.G., D.S.O., O.B.E., Colonel (retd.) R.A.V.C., and Lieut.-Colonel, Somerset Light Infantry. Graduated Glasgow, July 7th, 1899. Died April 15th, 1946, at North Curry, Taunton.

Brown, J., F.R.C.V.S., of Invergordon, Ross-shire. Graduated Glasgow, July 23rd, 1883. Fellowship, December 3rd, 1910. Died April 16th, 1946; aged 80 years.

News of the death of Mr. John Brown, of Invergordon, reaches us as we go to press. Our readers will learn of the passing of this fine veteran practitioner with the deepest regret and tribute will be paid in an early issue. It was characteristic of him that although his health had not been good for some weeks he persisted in attending to his practice.

Harrison, George Arthur, The Chase, Cattle Market, Wisbech, Cambs. Graduated N. Edinburgh, December 21st, 1899. Died April 11th, 1946; aged 69 years.

Mr. G. A. Harrison, M.R.C.V.S.

Mr. George A. Harrison, whose death we record above with much regret, had been in ill health since January. A native of Thornbury, Bradford, he was a son of the late Mr. and Mrs. Benjamin Harrison, his father also being a veterinary surgeon.

After serving in the 1914-18 war as a veterinary surgeon, he went to Wisbech in 1919 and bought the practice of the late Mr. R. Threadgill, Chapel Road.

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We regret to announce the death on April 6th at Fenton Barns, Drem, East Lothian, of Dr. Chalmers Watson, consulting physician to the Edinburgh Royal Infirmary, who had been well known for his work on nutrition and in later years devoted himself to rearing cattle for production of pure and safe milk. Dr. Chalmers Watson had been from time to time a welcome and thought-provoking contributor to the proceedings of veterinary societies.

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The Late Mr. John W. McIntosh, M.R.C.V.S., F.R.S.E.

A Personal Tribute

Mr. John Willett, M.V.O., M.R.C.V.S., writes:—

The death of Mr. J. W. McIntosh is a great loss to the profession he so long adorned, and as one of his oldest friends I feel it is only fitting that I should pay tribute to his memory.

Our first meeting was at Dick's College in Clyde Street, Edinburgh, where he was a senior student when I joined. Professor Walley was then Principal. I can see John coming to lectures in his kilt and sporran in which he looked a typical Highlander. After our College career was over we did not meet for some years, but on his coming to London to take charge of the large stud of horses I was the first to call upon him, thus further cementing a friendship which has lasted for over 50 years. We were always "John" and "Jack" to each other and many a happy Sunday afternoon have I and my family spent in his house at Dollis Hill. He was a charming host and a devoted husband and father. He was much missed at the various medical meetings when he retired and returned to his native home, but during the time I was on the Council of the R.C.V.S. we had plenty of opportunities of meeting, and when I retired from that body we generally arranged to see each other.

I could write for a long time as to his professional knowledge, his strength in debate, and his ever ready willingness to help a brother veterinary surgeon, but I will leave this to others. Mine is a personal tribute to a great gentleman and a true friend.

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The Funeral in Edinburgh

On Thursday of last week a representative gathering of relatives and friends attended the service in Warriston Crematorium, Edinburgh, for the late Mr. John W. McIntosh, of Crieff. The service was conducted by the Rev. C. M. Hepburn, B.D., of St. Michael's Parish Church, Crieff, of which church the late Mr. McIntosh was an elder.

The Town Council of Crieff, of which the late Mr. McIntosh had been a member, was represented by Mr. S. Graham Mickel, Town Clerk.

The following members of the profession attended at the Crematorium: Mr. Wm. Nairn, C.B.E., M.R.C.V.S., representing the R.C.V.S. and the Board of Management of the Royal (Dick) Veterinary College; Mr. D. S. Rabagliati, B.SC., F.R.C.V.S., representing the N.V.M.A. and the College Board of Management; Professor D. C. Matheson, Acting Principal; Professor W. M. Mitchell, Senior Vice-President of the N.V.M.A., also representing the Association; Professor G. F. Boddie; Mr. A. C. Doull, C.A., Secretary, representing the Royal (Dick) Veterinary College, of which the late Mr. McIntosh was a graduate and one of the first members of the Board of Management as reconstituted in 1905.

Dr. J. Russell Greig, Director of Moredun Institute (A.D.R.A.); Mr. Arthur Gofton, late Chief Veterinary Officer to the City of Edinburgh, who also represented the N.V.M.A., and Mr. J. F. Macdonald, M.R.C.V.S., of Tonbridge, Kent, who was for a time associated with the late Mr. McIntosh, were also present.

The Service at Crieff

Mr. McIntosh's funeral service was held at his residence, "Cairn Gower," Crieff. The service was attended by local friends, including the Town Clerk and members of the Town Council.

Mr. J. D. Ferguson, M.R.C.V.S., of Crieff, represented the N.V.M.A. and Mr. Panton, M.R.C.V.S., Blair Atholl, was present.

CORPORATION HORSE TRANSPORT

Uses for Which it is Economical

The Southampton Borough Engineer has submitted to the Works Committee a full report on the question of horse-drawn vehicles used by his department.

He states that such vehicles are used for street scavenging, small highway repairs, gulley cleaning, tar-spraying, cleaning manholes, etc., and suggests that the use of that type of transport for the work is most economical and that the stud should be maintained to the limit of the department's requirements.

At present, the department had eleven horses and six were hired, the daily total of horses employed thus being 17. He recommends the purchase of six new ones.

The Works Committee have recommended the adoption of the proposals and further recommend that six or eight of the Corporation horses shall take part in the Women's Land Army recruiting rally to be held in Southampton on May 4th.—*Southern Echo.*

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SCHEME FOR THE CONTROL OF DISEASES OF DAIRY CATTLE

Statement Showing the Number of Undertakings notified to the Ministry of Agriculture during the Month ended March 31st, 1946

County	Undertakings Notified		Total Undertakings		
	During Month	Previously	Number	Number of Cattle	
				Cows	Heifers
ENGLAND					
Bedford	1	33	34	762	421
Berks	—	89	89	3,287	2,086
Bucks	1	78	79	2,715	1,460
Cambridge	—	10	10	190	79
Chester	1	337	338	11,145	4,410
Cornwall	—	4	4	72	75
Cumberland	1	56	57	1,454	1,226
Derby	2	322	324	9,179	5,222
Devon	1	310	311	4,577	2,693
Dorset	—	66	66	2,078	1,124
Durham	2	254	256	5,482	2,314
Essex	1	220	221	7,401	4,344
Gloucester	1	91	92	2,459	1,741
Hampshire	1	381	382	10,873	7,468
Hereford	—	17	17	354	204
Hertford	—	80	80	2,362	1,554
Hunts	—	7	7	280	168
Isle of Ely	—	1	1	57	21
Isle of Wight	—	9	9	171	94
Kent	1	158	159	3,725	2,255
Lancs	—	167	167	4,918	1,844
Leics	—	100	100	2,517	1 888
Lincs (Holland)	—	3	3	25	11
Lincs (Kesteven)	—	22	22	301	169
Lincs (Lindsey)	—	103	103	1,989	1,194
Middlesex	—	13	13	414	212
Norfolk	3	129	132	4,274	3,010
Northants	—	72	72	2,129	1,812
Northumberland	—	61	61	1,907	1,270
Notts	—	183	183	4,038	2,424
Oxford	—	42	42	1,174	1,866
Rutland	—	8	8	156	107
Salop	—	224	224	6,425	3,391
Soke of Peterborough	—	—	—	—	—
Somerset	3	248	251	6,621	3,092
Staffs	1	186	187	5,426	3,528
Suffolk, E.	—	55	55	1,197	825
Suffolk, W.	—	48	48	1,008	707
Surrey	1	99	100	2,830	1,404
Sussex, E.	—	168	168	4,246	2,641
Sussex, W.	2	110	112	3,227	1,929
Warwick	1	122	123	2,781	1,958
Westmorland	—	7	7	187	181
Wilts	—	84	84	3,388	1,585
Worcester	—	154	154	2,997	1,541
Yorks, E.R.	1	97	98	1,532	948
Yorks, N.R.	—	110	110	3,333	88
Yorks, W.R.	1	233	234	5,657	2,279
WALES					
Anglesey	—	49	49	843	600
Brecon	—	12	12	204	129
Caernarvon	1	109	110	1,764	967
Cardigan	3	34	37	692	455
Carmarthen	2	270	272	5,064	2,670
Denbigh	—	32	32	738	1,335
Flint	—	83	83	1,864	878
Glamorgan	1	96	97	1,562	686
Merioneth	1	9	10	137	65
Monmouth	—	53	53	1,241	688
Montgomery	—	14	14	285	246
Pembroke	1	60	61	1,183	807
Radnor	—	—	—	—	—
TOTALS	35	6,192	6,227	158,897	89,389

Notes.— (1) Operative periods of undertakings : 1 year, 1,610; 2 years, 421 ; 3 years, 4,196. (2) Undertakings renewed for further periods : 1 year, 1,861 ; 2 years, 222 ; 3 years, 695. (3) Undertakings not renewed at end of operative periods, 1,698 ; (4) The figures showing the number of undertakings notified during the month relate to entirely fresh undertakings and do not include undertakings renewed for further periods. Undertakings which have been cancelled or not renewed are not included in the figures for previous notifications.

County	Undertakings Notified		Total Undertakings		
	During Month	Previously	Number	Number of Cattle	
				Cows	Heifers
SCOTLAND					
Aberdeen	—	20	20	986	448
Angus	—	17	17	654	428
Argyll	—	3	3	50	79
Ayr	—	13	13	465	262
Banff	—	1	1	12	20
Berwick	—	1	1	20	—
Bute	—	—	—	—	—
Caithness	—	—	—	—	—
Clackmannan	—	5	5	191	114
Dumfries	—	9	9	468	440
Dunbarton	—	1	1	60	40
East Lothian	—	—	—	—	—
Fife	—	28	28	1,029	597
Inverness	—	2	2	106	46
Kincardine	—	1	1	16	15
Kinross	—	3	3	60	39
Kirkcudbright	—	9	9	589	347
Lanark	—	6	6	232	171
Midlothian	—	—	—	—	—
Moray	—	—	—	—	—
Nairn	—	—	—	—	—
Orkney	—	—	—	—	—
Peebles	—	1	1	26	16
Perth	—	13	13	347	280
Renfrew	—	4	4	151	101
Ross-shire	—	—	—	—	—
Roxburgh	—	—	—	—	—
Selkirk	—	—	—	—	—
Stirling	—	9	9	310	282
Sutherland	—	5	5	92	44
West Lothian	—	—	—	—	—
Wigtown	—	8	8	393	177
Zetland	—	—	—	—	—
TOTALS	—	159	159	6,365	3,856

Notes.—(1) Duration of undertakings : 1 year, 38 ; 2 years, 9 ; 3 years, 112. (2) Undertakings renewed for a further period (included in column 2 of statement). 1 year, 71 ; 2 years, 7 ; 3 years, 48. (3) Undertakings expired and not renewed (not included in column 2 of statement) : 231. (4) The figures showing the number of undertakings notified during the month relate to entirely fresh undertakings:

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ADDRESSES OF DISEASE-INFECTED PREMISES

The list given below indicates, first, the county in which are situated the premises on which disease has been confirmed, followed by the postal address and date of outbreak.

Foot-and-Mouth Disease :

Surrey.—Bonny Shott Wood Farm, Worplesdon, Guildford, Surrey (Apr. 19th).

Swine Fever :

Berks.—Corner House, Kingston Bagpuize, Abingdon, Berks. (Apr. 15th); Drayton Road Allotments, Abingdon, Berks. (Apr. 16th).

Cheshire.—Heath End Farm, Alsager, Stoke-on-Trent, Staffs. (Apr. 22nd).

Hants.—The Piggeries, Steventon, Basingstoke, Hants. (Apr. 16th).

Lincs. (Lindsey).—St. Andrew's Street Allotments, Lincoln (Apr. 15th).

Norfolk.—Park Farm, West Bilney, King's Lynn, Norfolk (Apr. 22nd).

Yorks. (W.R.).—Headon Street Orchard, Moor Top, Ackworth, Pontefract, Yorks. (Apr. 15th); Northcolt Piggeries, Undercliffe, Bradford, Yorks (Apr. 20th).

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MILK BOARD'S "TUBERCULIN TESTED" OBJECTIVE

"With the coming of the war," states *The Farmers' Weekly*, "almost overnight the problem facing the Milk Marketing Board ceased to be finding a market for the milk, but finding the milk for the market. It is, then, a natural development of the Board's work, that with all milk already sold, it should turn its energies to improving both the volume and the quality of the milk produced. The value of the Board's work in improving production through its help in milk recording is already witnessed by the county reports now being issued. Moreover the proposed establishment of a Central Register of Milk Records promises a fount of information needed by everyone breeding dairy cattle. Similarly the establishment of a network of artificial insemination centres offers the prospect of a rapidly improving quality of stock, which would take many years to attain by normal breeding, and brings within the reach of even the smallest farmer the use of bulls he could not hope to have economically other than with the help of the Board.

"During the past few weeks a further great step has been announced—this time to improve quality—by the Board's adoption of a policy of all tuberculin tested milk. That every gallon of milk we produce should come from T.T. cows is a wholly admirable objective and we are delighted that the Board has had the courage and foresight to state it as a definite part of their policy. Since

the Board has announced its objective we may reasonably presume that it has also worked out a scheme for attaining it. It will affect every producer in the kingdom and it is only fair that we should know at the earliest possible date what these proposals actually are. Uncertainty can only breed anxiety."

And "Blythe" writes in *The Farmer and Stock-Breeder*: "I understand that the Ministry of Agriculture is still sitting tight on the Milk Board's plan to effect an extension of T.T. herds. Perhaps the delay is due to the fact that so many departments in the Ministry now have a finger in the pie, contrary to the Government's White Paper, which visualized simplicity. Disease questions will now concern three divisions: animal health, disease, and advisory, with decisions being made at a high level. Certainly this is the best way to postpone any decision.

"It is imperative that we should get moving on the T.T. question without delay, and not pin all our hopes on methods which may take 20 or 30 years to achieve our objective. Is the only approach by way of creating T.T. herds? It would be possible to facilitate progress if the Ministry were to grant a capitation fee for attested stock not producing T.T. milk. That would be particularly welcome for remote farms, for rearing areas and for all units where water supplies and buildings are inferior. The great need is for tested stock; the eradication of tuberculosis need not be tied to a premium on milk as at present."

* * * * *

NATIONAL MILK RECORDS

Commenting on the publication of the first complete report of the National Milk Records, the *Farmers' Weekly* observes: "The necessity for measuring milk yields, if any real improvement is to be made in the efficiency of milk production, is self-evident. No one can feed intelligently or breed with any hope unless he knows definitely the material he is handling. It is only when we begin to examine the ascertained facts of the situation that we really begin to know where we are and how far, and in what direction, we have to go. This is equally true of individual farmers as of the industry."

The returns show that 11 per cent. of our milk-selling herds and 17 per cent. of the milk-selling cows of the country are recorded. Last September the number of cows actually recorded was nearly 400,000. There is an increase in the number of cows recorded which, in turn, has been far exceeded by the number of cows tested for butter-fat. In nine months of 1943 the number of tests was 297,000; last year it was 1,242,000. There are now 154 herds in the country each with an average of over 1,000 gallons per cow, and 109 animals were 2,000-galloners. A less satisfactory feature is the wide discrepancy in the popularity of recording in different areas.

CORRESPONDENCE

The views expressed in letters addressed to the Editor represent the personal views of the writer only and must not be taken as expressing the opinion or having received the approval of the N.V.M.A.

Letters to the Editor should reach the Office not later than by the first post on Monday morning for insertion in following Saturday's issue.

Notice to Correspondents

The Editorial Committee regrets that, the paper supply situation having deteriorated, it has become necessary to ask correspondents again to accept a limitation on the length of letters submitted for publication. Accordingly, contributors to our Correspondence Columns are requested to note that, until further intimation is made, their communications must not exceed 350 words.

* * * * *

THE PATHOGENICITY TO CATTLE OF *T. VIVAX*

Sir,—I was very interested in Mr. H. E. Hornby's letter of the 13th inst. on the above subject.

Some years ago I had the opportunity of studying this subject in Uganda and subsequently in Nigeria. I was impressed by the striking difference in the pathogenicity of *T. vivax* for cattle in Uganda and in Nigeria. It was the general opinion in the former colony that *T. congolense* was the most frequent cause of high mortality and that *T. vivax* rarely gave trouble. On the other hand, in Nigeria *T. vivax* was the trypanosome most frequently encountered and associated with heavy mortality.

These points are of course well established in the early reports of Mr. W. W. Henderson, former Director of Veterinary Services, Nigeria, and Mr. U. F. Richardson, former Veterinary Pathologist, Uganda.

Recent reports have not been available to me, but I would be interested to know if this geographical difference in pathogenicity is still observed.

A comparative review of animal trypanosomiasis in the Colonies would be of value and interest. Yours faithfully,

Yew Tree Cottage, F. H. Manley.
Bassett Avenue, Southampton.
April 16th, 1946.

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TUBERCULIN TESTING

Sir,—I should be most grateful if someone could explain the difference between the number of reactors produced by the Initial test, and the number produced by the Ministry's first Official test of a herd for Attestation.

I have asked members of the Ministry's staff, but am merely told that the second test nearly always produces more drastic results than the first.

This is apt to cause reflections to be cast on the practitioner who carried out the Initial test. It may also account for a certain apathy amongst farmers who are otherwise willing to have T.T. herds.

Yours faithfully,

Fairfield, Cockton Hill Road, Michael Searle.
Bishop Auckland.
April 14th, 1946.

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MILK LOSS THROUGH CATTLE DISEASE

Sir,—This matter, which was referred to by my illustrious namesake in the *Record* of April 6th, closely concerns one about which I wrote (*Vet. Rec.*, Jan. 19th) complaining about the failure of the Animal Health Division to issue reports. The answers to the first two questions in the letter of April 6th are undoubtedly "None." Estimates on loss from livestock disease are presumably based on the absurd assumption of a normal 100 per cent. productivity of every cow for every month of its life. This merely sets an impossibly high target for what might be done remedially, hence foreshadows inevitable disappointment.

However, Sir, my main object now is to state an open suggestion to the N.V.M.A. to make it their business to obtain reliable estimates of loss from disease, based on proper facts and corrected for what might be called normal wastage. Obviously an important source of data is the Animal Health Division, which one hopes would be willing to give information on request, even though it refuses to publish it. Another undeveloped source of information is the livestock insurance records. In Sweden there is very close liaison between the veterinary educational authorities and the leading livestock insurance company and full benefit to each side is furnished by the other. This is interestingly described in a recent jubilee publication which was noticed in the *Veterinary Bulletin* recently.

Yours faithfully,

April 10th, 1946. J. Tweedale Edwards.

DISEASES OF ANIMALS ACTS, 1894 TO 1937, AND AGRICULTURE ACT, 1937 (PART IV).

Summary of Returns of Confirmed Outbreaks of Scheduled (Notifiable) Diseases

Period	Anthrax	Foot-and-mouth	Parasitic Mange•	Sheep Scab	Swine Fever
March 16th to 31st, 1946 ...	3	2	—	1	38
Corresponding period in—					
1945 ...	7	8	—	4	48
1944 ...	9	2	1	6	30
1943 ...	15	—	1	11	36
Total Jan. 1st to Mar. 31st, 1946 ...	29	20	4	34	171
Corresponding period in—					
1945 ...	34	59	3	33	277
1944 ...	63	15	5	56	152
1943 ...	91	10	4	85	139

Note.—The figures for the current year are approximate only.
• Excluding outbreaks in Army Horses.

Tuberculosis (Attested Herds) Schemes

The number of Attested Herds, *i.e.*, herds officially certified as free from Tuberculosis as at March 31st, 1946, was as follows:—

England	Wales	Scotland	Total (Great Britain)
5,645	9,531	6,215	21,391